



Scenic River Road  
to Manhattan  
EXIT 307

# Invasive Old World Bluestems Spread Across the Great Plains

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They are stealth invasive plants. Few people see them coming, or recognize them when they first colonize an area. Most residents are not alarmed until these plants metastasize and are spreading in place and leapfrogging along roadways and into native grasslands. They are grasses from other continents, primarily Eurasia, and as grasses they are not initially conspicuous within established grasslands.

The two invaders that worry many of us most as they spread across Kansas and begin to establish a toehold along the southern edge of Nebraska are Caucasian bluestem (*Bothriochloa bladhii*) and Yellow bluestem (*B. ischaemum*). Collectively they are often referred to as “Old World Bluestems” (OWBs), including various cultivars of yellow bluestem (Turkestan bluestem and King Ranch bluestem).

Although these grasses are less palatable to cattle than our native warm-season grasses as they mature, and are often bypassed by grazers if there is any native forage

available, they have been planted in many southern states. Initially this was because they are so easy to establish. OWBs are aggressive and prolific seed producers. Like so many non-native plants, they were incorporated into experimental “trials,” selected as cultivars and promoted. After being approved for planting in CRP fields and other areas in Oklahoma and Texas, they escaped to blanket native grasslands. Extensive landscapes that were previously native grasslands have now been completely transformed to near monocultures of OWBs.

Solid stands of OWBs have inferior value as habitat for most wildlife. Native grasslands with native legumes and forbs offer far superior nesting, brood-rearing and year-round habitat for quail, prairie grouse and grassland songbirds. Dense stands of OWBs inhibit movement of upland game bird chicks, and are relatively devoid of invertebrate foods. The hispid cotton rat (*Sigmodon hispidus*) is one of the few animals that seem to thrive in the dense cover of OWBs—providing a benefit in some instances to hawks, owls and other predators. However,





Photo by Ron Klataske

there are generally no ecologically redeeming values of OWBs in Great Plains landscapes. Native grasses are more beneficial in almost every respect and much easier to manage.

With only a few exceptions, OWBs were not approved for CRP plantings in Kansas. However, test plantings were conducted at USDA Plant Materials Centers near Woodward, Oklahoma, in Texas and near Manhattan, Kansas. The Agricultural Research Center at Hays, Kansas established plots. Their progeny remain in the surrounding areas, especially in the Hays area. Throughout Kansas, however, the main portal for introduction and spread of OWBs seems to be along state highways, followed by county roadsides. They are also commonly seen on areas previously disturbed by construction activities, such as flood control levees and embankments on dams. OWBs easily establish and thrive more readily on disturbed sites than do native grasses.

The seed sources of these beachheads for OWBs are

seldom documented. Likely sources include contaminated native grass seed coming from southern regions and contaminated mulch used at construction sites. The contamination is then spread by roadside mowing and maintenance equipment. Transportation of hay harvested from OWB-infested areas is another potential mechanism for spreading OWBs far and wide.

Once firmly established, OWBs are very difficult to control, and it can be equally difficult to restore native grasses and forbs to the site. OWBs are allelopathic. Allelopathy is a natural mechanism where one plant produces chemicals that inhibit the growth of other plants. Studies at Oklahoma State University have determined that OWBs change the chemical composition and biota of soils in ways that reduce germination of a wide range of native seeds and inhibit the growth—and survival—of seedlings. Even leachate, water flowing through OWB leaves and litter, has this impact.

Control is particularly difficult because there are pres-





Although Caucasian Bluestem destroys and replaces almost all other plants, it grows in clumps with bare soil between the clumps, as shown along Carnahan Creek Road in Pottawatomie County following a spring burn. Thus, it is of little value for erosion control. As illustrated by a photo made in the fall on the other side of the road, the canopy of Caucasian Bluestem covers everything and then moves out across adjacent rangeland like an ecological cancer. Photo by Ron Klataske

ently no herbicide application methods that are sufficiently selective at eliminating OWBs without killing most of the native vegetation. Glyphosate and imazapyr are being used in field studies conducted at Kansas State University. Some applications of imazapyr have shown promise at controlling OWBs without totally eliminating all of the native warm season grasses in plots. However, one application will not solve the problem. To prevent extensive collateral damage to native vegetation, and extensive costs associated with control and site restoration, early detection and eradication of old world bluestems is extremely important. If they become widespread in the Nebraska Sandhills, one can imagine that the cost of control would be astronomical for ranchers.

Caucasian and yellow bluestems are both listed as “priority invasive plants” on the Nebraska Invasive Species Program website. The plants listed are defined as “non-native plant species that currently pose a threat to Nebraska’s native plant communities.” However, OWBs have not yet been classified as “noxious” weeds in Nebraska. In Kansas, they have not yet received notice as “priority invasive plants,” let alone been included in the list of noxious weeds to be controlled and eradicated in Kansas. If classified as noxious weeds, contaminated seed and hay would be controlled. Agencies and other land managers would be required to prevent establishment along roadsides and in other locations, provide eradication, and reduce further propagation or dissemination of such weeds in the state.

Although it is too expensive and impractical, if not impossible, to eradicate or substantially control OWBs

in Oklahoma and Texas, Nebraska can conceivably implement control measures that will prevent these invasive grasses from becoming widespread in the state. Likewise, it may not be too late for Kansas to stop these stealth invaders. Prompt and decisive action is essential. These invasive plants present a devastating threat to the productivity of native rangelands for livestock and the quality of habitat for grassland birds in the central Great Plains. The tallgrass prairies in the Flint Hills could eventually be overwhelmed by these invasives. Because the Kansas Department of Agriculture has abrogated the agency’s responsibility and failed to step up to the challenge of proposing and regulating these invasive grasses as “Noxious” plants, it is up to residents to request that classification on a county-by-county basis. The leadership of county commissioners will be important. Assistance with identification and control measures should also be provided to landowners. With or without awaiting designation, other governmental agencies, including the Kansas Department of Transportation and county road departments, need to identify and control OWBs on the lands they administer.

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This article (absent the final paragraph) was written for and published in the UNL Center for Grassland Studies Winter-Spring 2016 newsletter. In 2015 Audubon of Kansas sponsored a workshop on the subject near Manhattan for landowners and land managers, some of whom came from across the state. Additional workshops were held in conjunction with the Kansas Wildlife Federation in Hays and Greensburg.